



United States Department of Agriculture
Natural Resources Conservation Service

NATIONAL PLANT MATERIALS CENTER BELTSVILLE, MARYLAND

TN 97-08

TECHNICAL NOTE

DECEMBER 1997

WILDFLOWERS FOR THE MID-ATLANTIC: COLUMBINE (*Aquilegia canadensis*)

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INTRODUCTION

Columbine, *Aquilegia canadensis*, is a perennial wildflower that grows on the East Coast from Nova Scotia to Florida (Martin, 1990). It inhabits dry, rocky woods or steep slopes with poor or calcareous soils (Jones and Foote, 1990), and is commonly found in Maryland in piedmont or mountainous regions (Brown and Brown, 1984). The plant has smooth, pale green stems that can grow 1 to 2-1/2 feet tall. Leaves are most abundant at the base of the plant and are attractively divided into 3 scalloped-edge leaflets. Columbine blooms April through July in Maryland (Brown and Brown, 1984); the spurred flowers are 1 to 2 inches across and are two-toned: sepals and spurs are red, while petals and stamens are creamy to bright yellow (Jones and Foote, 1990). There are numerous 1/12 inch long shiny black seeds which develop inside follicles soon after blooms have faded.

USES

Columbine is an eye-catching plant when in bloom, and it is useful for planting in woodlands or in meadows, if grass is sparse enough (Art, 1986). The National Plant Materials Center (NPMC) produces columbine plugs, quart-size plants, and seed for slope and roadside plantings in Shenandoah National Park. The plant can be massed to naturalize an area, planted as clumps in rock gardens, or grown for cut flowers. Columbine is also a key species to use when gardening for wildlife, as both hummingbirds and bumblebees are drawn to its nectar (Art, 1986; Phillips, 1985).

SUITABLE SITES

Columbine is found naturally over a wide range of environmental conditions. It can be grown in full sun to deep shade, and although many authors suggest planting columbine in well-drained, neutral to slightly acidic soil (Wilson, 1992; Martin, 1990; Sperka, 1984), it can also tolerate thin, gravelly soil with a pH of up to 8 (Art, 1986).

SEED COLLECTION AND AVAILABILITY

Seeds of columbine are readily available from mail-order catalogues, and may also be collected from wild populations. Seeds are easily dislodged when the follicles enclosing them dry and split, so plants should be watched carefully following flowering. Generally, follicles turn brown and black (ripe) seeds are ready to collect 3 to 4 weeks after blooming. The NPMC has collected mature seeds from native stands in the mountains of western Virginia in late July. Phillips (1985) suggests seeds may be collected as long as they are black, even if follicles are not completely

brown. Follicles can be cut and dropped into a paper bag or seeds may be directly shaken from the heads into a bag.

Seeds are harvested from a small production block at the NPMC continuously through the month of July. Follicles are cut into a bag and allowed to air-dry for several days to release all the seeds. Small amounts of seed are best processed by pouring seed and any chaff from follicles through a handscreen; chaff will remain on top of the screen and the tiny columbine seeds will fall through screen holes into a catch bowl. The cleaned seeds are stored dry in plastic bottles or paper envelopes at 35 °F until needed.

ESTABLISHMENT AND MAINTENANCE

The NPMC has used seedling transplants as a means of establishing columbine. Seeds are sown in 392-cell trays (TLC Polyform Inc., Minneapolis, MN) with a commercial germination mix. Stratification is not necessary for germination, and seeds germinate over a period of 2 weeks. After 3 to 4 weeks of growth, seedlings in 392-cell trays are transplanted into Ropak Multi-pot #2 containers (Steuwe & Sons, Corvallis, OR) for dibble planting at revegetation sites. The NPMC uses a commercial peat : perlite mix and a time-release fertilizer in all seedling trays. A soluble fertilizer (20-18-18) is applied twice a week to young plants in the greenhouse. Multi-pot plugs are ready for the field in approximately 14 weeks.

Columbine can be direct-seeded at a planting site. The soil should be lightly scarified and seeds sown on the soil surface either in the fall or in early spring. There is no information in the literature regarding sowing rate, but a commercial grower's general recommendation for wildflower seeding is a rate of 11 pounds per acre (Clyde Robin, 1997).

SEED PRODUCTION

A 0.025 acre production block of columbine was established at the NPMC in 1993 and 1994. The amounts of seed harvested from the block in 1995, 1996, and 1997 were 0.4 pound, 0.9 pound, and 0.6 pound, respectively.

The approximate number of seeds per pound is 392,000 (Applewood, 1997).

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